What is claimed is:

1. A manufacturing method of a silicon wafer, including :

an etching process (14) storing acid etching solution and alkali etching solution in plural etching tanks, respectively, and immersing a silicon wafer gone through a lapping process and having degraded superficial layers in the acid etching solution and the alkali etching solution in order so as to remove the degraded superficial layers;

a double surface polishing process (16) to simultaneously polish the front and rear surfaces of said wafer after said etching process;

wherein sodium hydroxide aqueous solution of 40 to 60 percent by weight is used in the alkali etching solution of said etching process (14), and

wherein a polishing removal depth A in said wafer front surface is made 5 to 10 μm in said double surface simultaneous polishing process (16), and a polishing removal depth B in said rear surface is made 2 to 6 μm, and a difference (A-B) between said polishing removal depth A and said polishing removal depth B is made 3 to 4 μm.

2. The manufacturing method according to claim 1, wherein the etching process is performed by the alkali etching after the acid etching.

3. The manufacturing method according to claim 1, wherein the number of acid etching tanks is made 1 to 3, and the number of alkali etching tanks is made 1 to 3.

4. The manufacturing method according to claim 1, wherein the acid etching solution includes hydrofluoric acid, nitric acid, acetic acid, and water, respectively.

5. The manufacturing method according to claim 4, wherein,

when the resistance value of the silicon wafer is below 1 Ω · cm, the mixing ratio of hydrofluoric acid, nitric acid, acetic acid, and water is hydrofluoric acid: nitric acid: acetic acid: and water = 1:1 to 5:3 to 8:3 to 7 by percent by weight.

6. The manufacturing method according to claim 4, wherein

when the resistance value of the silicon wafer is above 1 Ω · cm, the mixing ratio of hydrofluoric acid, nitric acid, acetic acid, and water is hydrofluoric acid: nitric acid: acetic acid: and water = 1:5 to 9:1 to 6:1 to 5 by percent by weight.